

GARDENIA CANKER

S. A. Alfieri, Jr., Plant Pathologist

Gardenia canker was described as early as 1894 in England by M. C. Cooke (1) and has since been reported from California, Ohio, Nebraska, Kansas, Washington, Massachusetts, Italy, and Florida since 1940 (Plant Disease Records, Div. of Plant Ind., Fla Dept. Agr.). Gardenia canker is considered by most workers to be a serious disease (3, 5, 6). The fungus *Phomopsis gardeniae* Hansen and Barrett is the causal pathogen of this disease and is reported to have a perfect stage, *Diaporthe gardeniae*, as proposed by Miller (5). The fungus is considered a wound parasite (3, 4, 6), however once entrance is gained, the disease progresses in development, eventually producing mature cankers on which fungus pycnidial fruiting structures are found. Under conditions of high relative humidity and temperature the partially submerged pycnidia in the callous tissue of the cortex produce abundant spores which are easily dispersed by the watering process (6). The fungus remains localized around the area of the canker (4, 5) and overwinters from one season to the next on diseased portions of infected plants (3). All parts of the plant are susceptible to infection, i.e., roots stems, and leaves (4), although cankered stems are most symptomatic for this disease. Leaf joints on cuttings where leaves are cut off prior to rooting are considered important infection sites, as well as any area on plants having some kind of mechanical injury (2, 4, 6); in no case was infection established without prior wounding of the plant (4, 6). Varietal susceptibility is reported in 1936 by Obee, who also suggest that differences in fungus morphological characteristics indicate the possible existence of fungus strains.

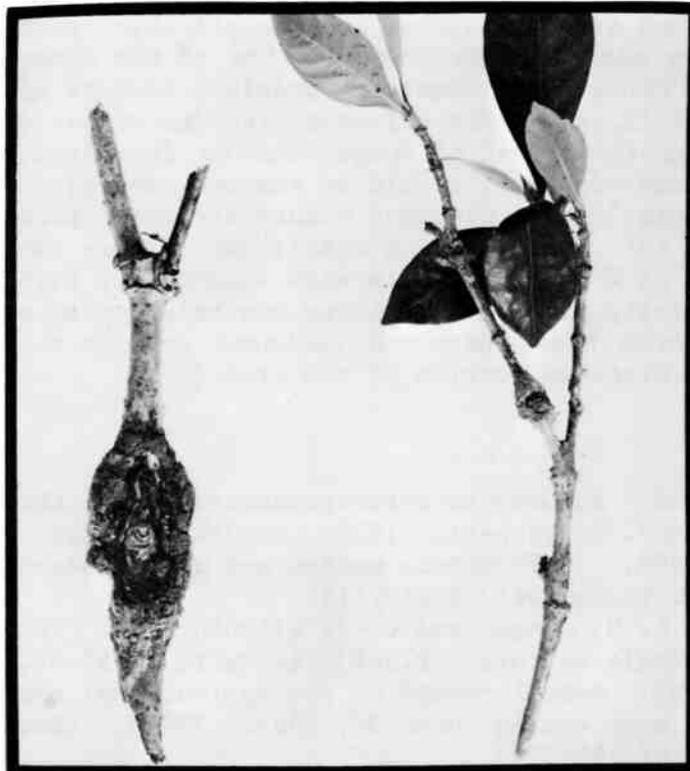


Fig. 1. Gardenia canker caused by *Phomopsis gardeniae* Hansen and Barrett, a severe canker on the left and a young canker on the right.

SYMPTOMS. The first noticeable symptom of gardenia canker is a wilting of the foliage on a portion of the plant or a sudden wilting of the entire plant. Stem cankers are at first small, circular to oblong, brownish areas on the stem. As the canker enlarges, at times up to 2 in., the entire area of the bark is affected and girdling

takes place. The diseased layer decays and becomes easily separated from the wood which subsequently becomes exposed (3). Figure 1 shows the typical stem canker of gardenia caused by *P. gardeniae*. In some instances the periphery of the canker becomes calloused. The callous tissue, if pronounced, develops into a gall soon after the appearance of the canker and becomes rough and corrugated, followed by the formation of deep longitudinal cracks. Galls may develop to 2-3 times the diameter of the affected stem. Branches close to a canker show a loss of vigor compared to branches on an unaffected side of a stem. The callous tissue underlying the diseased area at the border of the cankered lesion often becomes bright yellow or yellowish-orange (3). Affected plants may develop leaf spots as well as root lesions. Root lesions can occur in the absence of stem cankers (3). Stem cankers are more commonly found at the base of the plant, but can occur anywhere on the plant, particularly at points where plants have sustained injury from propagative cuttings or flower cuttings. Older infected plants tend to lose their glossy green leaf color and become a dull green with chlorotic leaves, followed by defoliation or a drying and browning of the foliage. Flower buds abscise before opening. Such plants wilt on bright sunny days and make little growth. They tend to decline noticeably with cool temperatures and improve in vigor with warmer temperatures (4). Even when a canker completely encircles the stem, the plant is slow to die, but affected plants are usually stunted (6).

CONTROL. The most important aspect of disease control is that which minimizes plant injury, since the fungus can only be established through the presence of wounds. Cuttings for propagation should be taken from the tops of disease-free plants (7). For disinfection and protection of cuttings, a captan dip is suggested. Wherever possible "clean" stock plants should be used for propagative cuttings. Soil sterilization is advocated by many workers (3, 6, 7), as well as the use of clean tools and equipment (3). Pruning affected stems, where applicable, should be accomplished with extreme care so as to minimize the introduction of the fungus to healthy plants via the cutting tools. Control of insects as possible vectors of the fungus may provide added disease control (2, 4). The cultural practice of avoiding splashing water is important in reducing the spread of fungus spores from infected to healthy plants. Diseased plants, if unproductive, should be removed and destroyed. Disease treatment is advocated, particularly when diseased plants are still productive, so that commercial loss is reduced (4). The following additional disease control measures have been suggested: a spray at 2 week intervals with Daconil or Dithane M-45. In some instances, the productivity of affected plants can be enhanced or lengthened by heaping soil up around the stem base above the cankered area so that new root formation is encouraged above the diseased portion of the stem (7).

Literature Cited

1. Cooke, M. C. 1894. Answers to correspondents. *Gard. Chron.* 15:605.
2. Hansen, H. N. and J. T. Barrett. 1938. Gardenia canker. *Mycologia* 30:15-19.
3. Huber, G. A. 1936. A *Phomopsis* canker and gall disease of gardenia. *Florist Exchange Hort. Trade World* 86(10):11.
4. McKenzie, M. A., L. H. Jones, and C. J. Gilgut. 1940. *Phomopsis gardeniae* in relation to gardenia culture. *Plant Dis. Rptr.* 24:58-62.
5. Miller, H. N. 1961. Annual report of the agricultural experiment stations, Florida, for the year ending June 30, 1961. 399 p. (*Rev. Appl. Mycol.* 41:523 ; *Rev. Appl. Mycol.* 42:236).
6. Tilford, P. E. 1934. Stem canker disease of gardenia. *Ohio Agr. Exp. Sta. Bimonth. Bull.* 19(168):116-117.
7. 1966 Cornell recommendations for commercial floriculture crops. Cornell Univ., Ithaca. 64 p.